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Department of Natural Resources

Special Earth Day Issue

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COVERS: Front -- Celebrate Earth Day 1990. Join a growing trend! Photo by Ron Johnson. Back -- Help heal our earth and preserve it for the future. DNR photo.

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Earth Day's 20th Anniversary

An Editorial

Twenty years ago, the first Earth Day heightened the awareness of most Americans that our lifestyle was having a major impact on the Earth. Who among us old enough to recall could ever forget the TV ad of the Native American viewing his polluted environment?

Today, the world is undergoing dramatic social change as evidenced in eastern Europe, the Soviet Union, Central America and South Africa. Promises of new freedoms and democracy abound. As I witness these events, it strikes me that within these nations, there is also a developing environmental protection movement. People are recognizing that freedom will not mean as much if it occurs in a polluted and unhealthy environment.

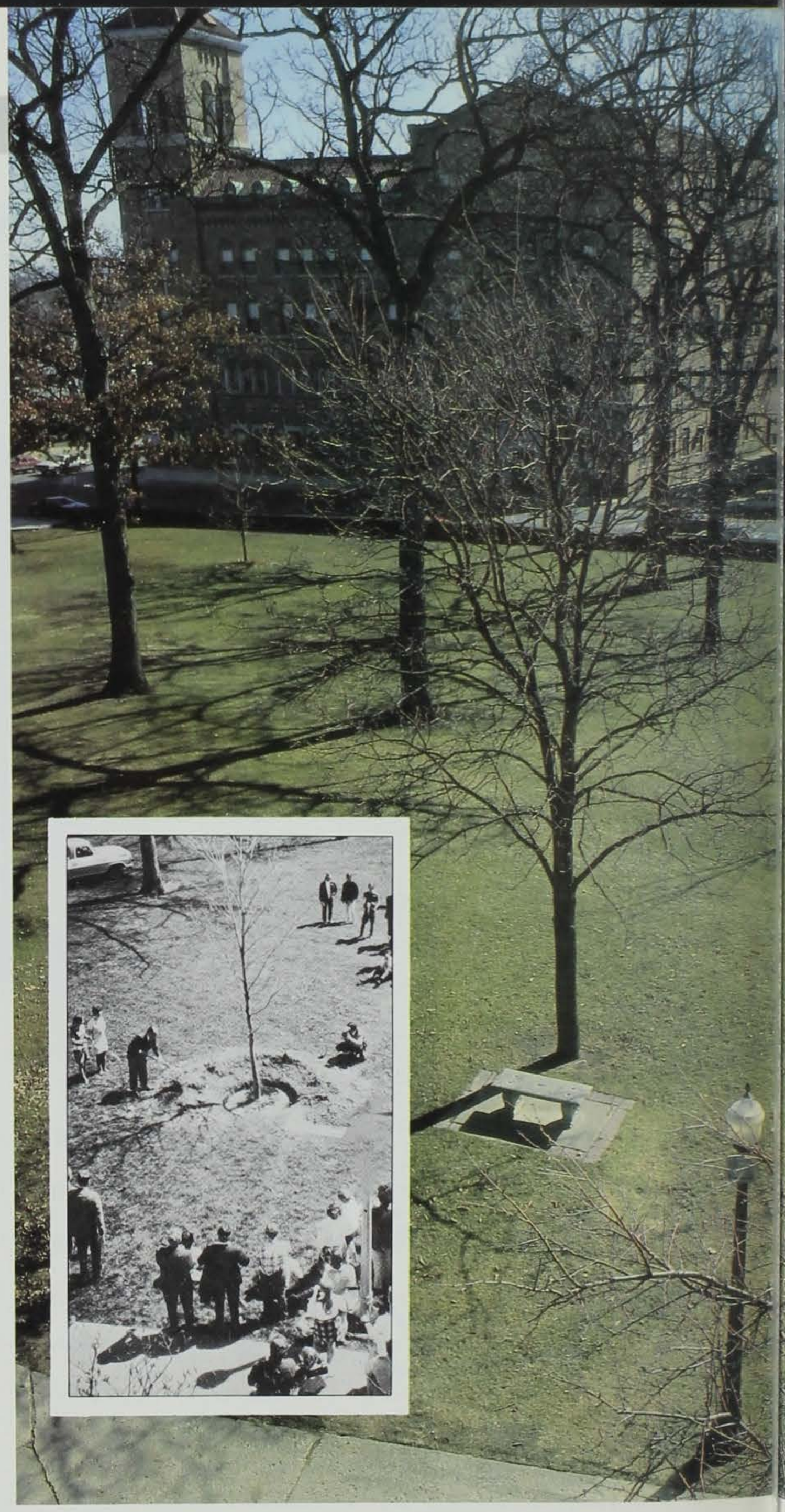
Can we say we placed the same value on environmental quality in the United States? Even though we have spent billions cleaning up some of our past mistakes? Too many of us still have not made environmental quality a significant part of our everyday lives.

Twenty years after Earth Day 1, our rivers and air are cleaner by some standards of measurement. But our oceans are not. We still use excessive amounts of fossil fuels which put too much carbon dioxide in the air, and, when mishandled, can contaminate priceless natural resources. Our mountainous landfills are quickly reaching capacity because of the conveniences of a wasteful society. While most of us do not want a factory smokestack, an oil spill or a landfill in "our back yard," we still create the demand for products that require these environmental sacrifices.

When we incorporate environmental protection values in our everyday lives, we will have arrived at a turning point for a brighter environmental future. Environmental awareness came from the first Earth Day. Environmental action should be the result of this one. Join us in the 1990s as we each strive to change our lifestyles in favor of the Earth.

RON JOHNSON

Larry J. Wilson, Director
Iowa Department of Natural Resources



As part of the first Earth Day on April 22, 1970, a Schwedler maple tree was planted on the Drake University campus in Des Moines. Planting trees is a major theme for this year's 20th anniversary of Earth Day.

RON JOHNSON/ INTERIOR PHOTO BY THE DES MOINES REGISTER

Earth Day 1970

Where Do We Go From Here?

"The American environment is the rats in the ghetto. It is a hungry child in a land of affluence. It is 'public housing' that isn't worthy of the name. It is a problem whose existence is perpetuated by the expenditure of $25 billion a year on the war in Vietnam, instead of on our decaying, crowded, congested, polluted urban areas that are inhuman traps for millions of people."

—Gaylord Nelson, founder of Earth Day

When Wisconsin senator Gaylord Nelson came up with the idea of Earth Day, he had hoped that maybe 40 campuses across the country would partake in environmental teach-ins on April 22, 1970. The idea caught fire and before the first Earth Day was over, 2,000 colleges, 10,000 high schools and 2,000 communities participated.

"The land is a heritage that must be passed on to the future generations," he said in Milwaukee on the eve of the first Earth Day.

What was happening in America in 1970 that caused 20 million people to stand up for the environment and say enough is enough?

The burning of fossil fuels was clogging the air, spreading black clouds of matter across the horizon, blocking the sun's rays and leading some scientists to suggest the earth's temperature was falling into another Ice Age. The water was just as bad. Our lakes and streams, after years of use as sewers, dumps and cesspools, had become "noxious sumps of toxins." And, major oil spills were blanketing the coastlines with muck.

The insecticide DDT was becoming known for its effects on wildlife. Various birds of prey, including the bald eagle and peregrine falcon, were laying eggs with shells so thin, they often broke before the embryos could fully develop. Within two years, the government would ban the insecticide.

Americans Participate Nationwide . . .

Across the country, the first Earth Day generated activities from nature walks to direct citizen actions against major polluters. So many politicians took part, the United States Congress shut down. Dozens of senators and members of congress fanned out across the country to appear at rallies, teach-ins and street demonstrations.

Washington, D.C.: 1,700 college students and school children marched to the Interior Department where a couple quarts of oil were poured onto the sidewalk as a protest to oil spills in the ocean. Later in the day, government workers cleaned up the puddles.

New York City: Fifth Avenue was blocked off for

by Tammra K. Pavlicek

Earth Day 1970

two hours while 100,000 people strolled in the sun and watched Mayor John Lindsay drive by in an electric bus.

Boston: In one of the day's few scrapes with the law, 15 people protesting the supersonic jet at Boston's Logan International Airport were arrested for blocking a corridor in the Pan American Airways building.

. . . And In Iowa

Virtually every school in Iowa celebrated Earth Day with either a clean-up campaign, specially prepared lessons or some other symbolic event.

Des Moines: At Drake University a Schwedler maple tree was planted in front of Old Main.

Waterloo: Third-graders at Elk Run Heights gathered 104 pounds of litter from their school yard in 45 minutes.

Ames: Nearly every student at Ames High School either walked or biked to class. At one point, the line of walkers and bikers extended six blocks.

Red Oak: Students were dismissed from school early so they could clean up a creek running through town.

Davenport: Classes were suspended at Frank L. Stuart Junior High School where students were given the option of attending discussions or films in a program called "Reverence for Life Day."

Iowa City: At the University of Iowa about 250 college, high school and grade school students marched 10 blocks through downtown to protest pollution caused by motor vehicles.

The first Earth Day was an American celebration; this year's anniversary, however, will extend beyond U.S. borders into many Third World countries where populations are "choking in their own effluent and on toxins sent to them by industrialized countries."

Ames: At Iowa State University, Senator Harold Hughes suggested America "postpone the supersonic transport which can hardly be termed a top-flight priority alongside the environment."

Cedar Rapids: Students at McKinley Junior High School collected beer cans and other trash on their way to school. The morning haul filled the school's trophy case.

Dubuque: About 100 teachers and students rode their bicycles in the rain to the city's high schools.

Cedar Rapids/Mt. Vernon: Students of Coe College and Cornell College, respectively, paraded down First Avenue East in Cedar Rapids carrying a coffin containing garbage shaped into a human form. The coffin represented humans if they don't do anything to save the environment.

Mason City: Driver education classes picked up litter along the Winnebago River near the school grounds.

The first Earth Day was an American celebration; this year's anniversary, however, will extend beyond U.S. borders into many Third World countries where populations are "choking in their own effluent and on toxins sent to them by industrialized countries."

How successful will Earth Day 20 be? Perhaps a look back at an editorial that appeared in the *Des Moines Register* on April 22, 1970, is a clue to where we are headed.

"New terms, ecology and biogeochemical cycles, are heard more frequently than older words, like conservation, but the meaning is the same. Only now, on a crowded planet whose resources are being consumed at a ravenous pace, issues such as birth control, the worship of growth, consumerism and the proliferation of pollutants are parts of the same issue.

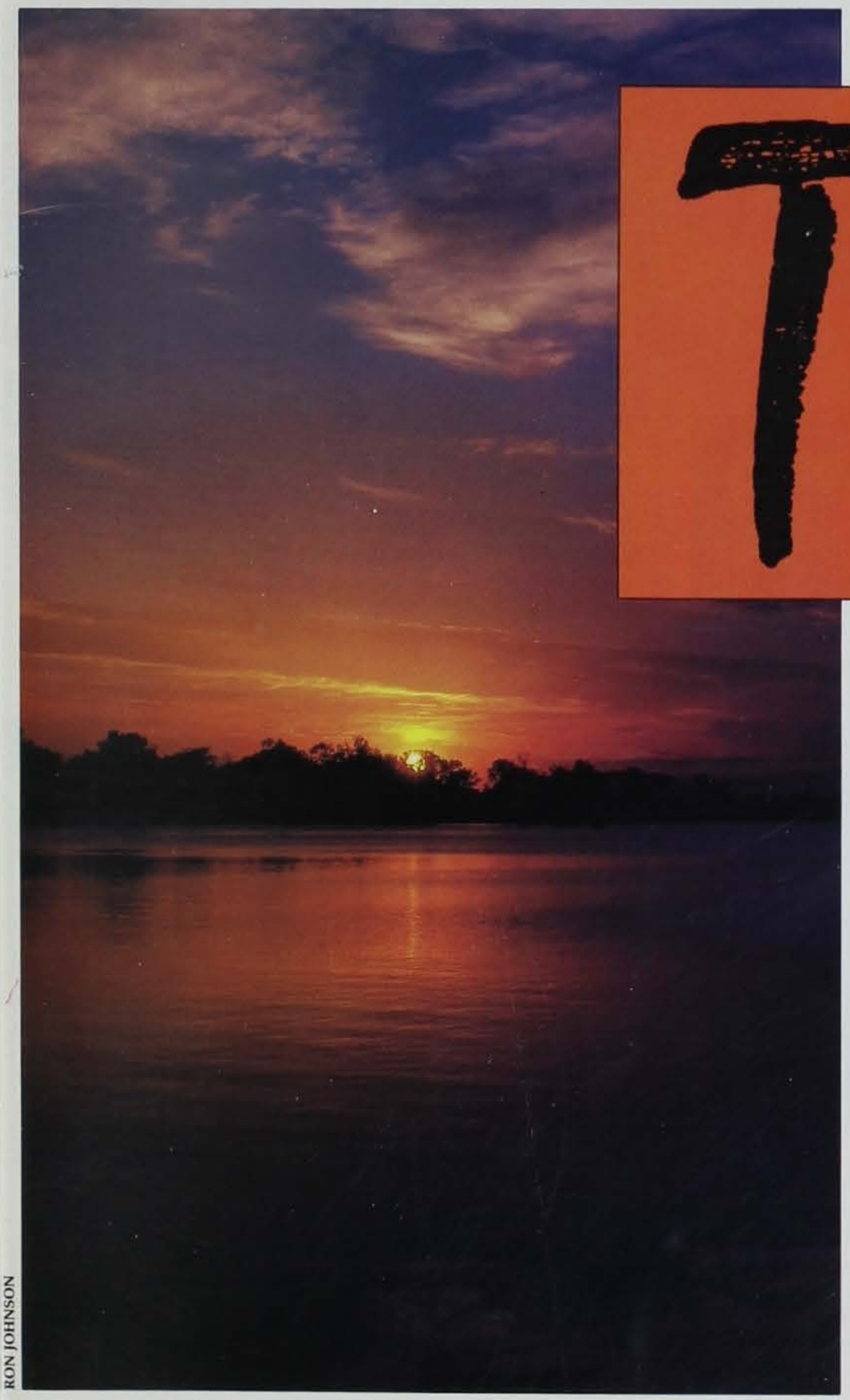
"Earth Day is a Spring rite, a catharsis. If it is to be more than that, students and adults must turn from general protests to look to their own communities, at this river, at that smokestack, at this freeway route, at that pesticide . . . They must familiarize themselves with the difficult technological, economic and administrative obstacles to pollution controls.

"They must roll up their sleeves, in a manner suggested by the Santa Barbara Declaration of Environmental Rights: 'Granted that ideas and institutions long established are not easily changed; yet today is the first day of the rest of our life on this planet. We will begin anew.'"

RON JOHNSON

Earth Day 1990

Have We Learned Anything From Ephesus?



RON JOHNSON

he City of Ephesus was nothing less than a jewel of the Greek civilization. Nestled in oak forest, the city overlooked a sparkling harbor, busy with trade. It boasted one of the great libraries of its time, an amphitheater that seated 24,000 and the Sanctuary of Artemis — one of the seven wonders of the world. With time, the Greeks deforested the area and converted the land to agriculture. Soon erosion became a serious problem. The harbor was dredged and the city moved four times as sediment washed from the deforested landscape to silt in the harbor. Eventually the city was abandoned.

Ephesus' environmental problems were local. In the time of the Greeks and Romans, in fact up until late this century, if environmental quality declined or resources were depleted there was always a cleaner environment or fresh resource somewhere else on earth. Today the solution is not as easy, and our problems cause one to wonder if we have learned anything from Ephesus.

by Richard Kelley

Earth Day 1990

As a biological species *Homo sapiens* has enjoyed enormous success. Only the dinosaurs have dominated the world in any way approaching that of humans. However, our success has created the environmental threats we face today. The single greatest threat is over population. The United Nations projects that by the year 2075 the human population of planet earth will have grown to 12 billion, roughly two and one-half times today's population. Without war, disease or our own common sense to interrupt our present population growth, the sheer number of people will result in immeasurable environmental damage. Unfortunately, United Nation projections are generally low. Low or not, three-quarters of the earth's population is expected to be living in the south. They will be inhabiting the very fragile tropical and subtropical regions of the planet, placing more pressure on ecosystems already under attack.

The tropical rain forests are the most biologically productive ecosystems on the planet. Of the 5 to 10 million species of plants and animals thought to inhabit the earth, approximately 1.5 million have been identified. More than one half of the species that have been identified, and most of those we have yet to identify, live in the tropics. As many plant species can be identified in Panama alone as in all of Europe. As populations grow in these tropical regions, demand increases for more and more land to be cleared for industrial growth and agricultural use, despite the fact the land cannot sustain agriculture for more than a couple of years. The situation is exacerbated by the willingness of financial institutions in the developed world to fund these activities. Consequently, tropical rain forests are being lost at a rate of about 60 acres per minute, or an area nearly the size of Iowa each year.

With the loss of forest habitat, species move rapidly toward extinction. The current rate of extinction is more than two species each day. However, the rate of extinction is increasing and directly related to the exponential growth in human populations and deforestation. The United Nations estimates that by the year 2075 the rate of extinction will have increased to 138 species per day, or around 50,000 species annually.

Deforestation, anywhere on the planet, affects much more than wildlife. Forests are major buffers against global warming. Because forests use carbon dioxide (CO_2) they act as a reservoir for CO_2. Increasing CO_2 in the atmosphere is often associated with the burning of fossil fuels, the rate of carbon dioxide build-up in the atmosphere also parallels the rate of global deforestation.

MARK J. LEOSCHKE

Iowa faces its own problems with extinction. The western prairie fringed orchid is found primarly on virgin prairies. More than 99 percent of Iowa's native prairie is gone. Currently, recovery programs are underway for some of Iowa's more visible threatened and endangered species such as the peregrine falcon, river otter and bald eagle. But many other species are imperilled by loss of habitat.

Forests, particularly those in the tropics, generate local rainfall events. Without the forests, rainfall declines. In subtropical regions, the end result is often the expansion of desert. When it does rain, without forests there is nothing to hold the soils in place and erosion rates soar. Erosion has resulted in the deterioration of water quality, as in the United States; economic and social hardship, as in the loss of fisheries off the Nile Delta; even the destruction of coral reefs in the Philippines.

The loss of forests is not just a problem of the tropics. In the temperate regions of the world, deforestation is also taking place. However, the deforestation in many places is far more insidious than the clear-cutting taking place in the Amazon Basin of Brazil or the Pacific Northwest of the United States. Across North America and Europe, acid rain is slowly but undeniably killing forests and aquatic life. Air pollution from power generation, transportation and industrial activities is lowering the pH of water vapor and turning the rainfall, fogs and snows of the temperate regions of the globe to a mild acid bath.

Air pollution problems, however, go beyond the issue of acid rain. Air pollution chokes the major cities of the world. Pollution in Los Angeles and Mexico City has become so bad that some health officials now believe breathing the air is as detrimental to health as smoking. At least one air pollutant — chlorinated fluorocarbon or CFC — has been identified as being responsible for the destruction of ozone in the upper atmosphere. The only protection the planet has from the intense radiation of the sun is the ozone. The hole in the ozone over the South Pole has enlarged since its discovery in the early 1980s.

Water quality, like air quality, has declined on a global scale. Pollution of the world's oceans is now a serious concern, not just because waste washes up on beaches but because the pollution is so evident in all oceans of the world. The infamous flammable rivers of the United States, like the Cuyahoga, no longer scare North America. Lake Erie, and the Thames River in England, once again support fish. However, despite the advances, rivers and lakes carry ever-increasing loads of sediment and toxic waste, And, groundwater, which serves as the nation's major source of drinking water, is now polluted across vast areas with agricultural contaminants. By burying our waste and unwanted toxic materials we are contributing to water pollution. Many of our landfills are now leaching contaminants to our drinking water.

LYNN BETTS, SOIL CONSERVATION SERVICE

Much of Iowa's private woodland areas have been damaged by livestock grazing or destroyed by bulldozers making way for more row crops. Woodlands provide a wide range of recreation and economic opportunities, not to mention the erosion-control benefits.

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The cycle of one environmental problem leading to another environmental problem quickly begins to look like a spiral of destruction. Sheer numbers of people alone will do enough damage but the behavior of individual members is the truly destructive force at work. The environmental problems facing the world in the next 20 years are caused by the basic belief, and subsequent behavior based on the belief, that everything short of human life itself is a resource to be used to the point of depletion. What we do not use, or use inefficiently, we have discarded to the environment. Resource depletion issues have now come to the forefront of international concern. The two most striking examples being the energy and food resources societies depend on for their survival.

The primary sources of energy for the developed nations and undeveloped nations are oil and wood, respectively. In both cases demand is out-stripping production. In the latter case, in many regions of the world, the depletion of wood resources has lead to expansion of desert. In the former, the consumption of fossil fuels has contributed to air quality problems. And, as resources are depleted, as in the case of oil, societies turn to another resource to deplete. In the case of oil the alternative has often been nuclear power.

Although the United States tends to avoid nuclear power as a source of energy, other nations have shown less hesitation. With increased reliance on nuclear power comes the increased risk of other incidents like those of Three Mile Island in Pennsylvania and Chernobyl in the Soviet Union.

The second example of resource depletion involves the major source of protein for the majority of this planet's inhabitants -- fish. Worldwide, fisheries production is in decline. The primary reason is over fishing, however, pollution is clearly affecting the resource.

When environmental problems of this magnitude are discussed, it is easy to accept the idea that nothing can be done by one individual to solve them. Such beliefs insure that nothing will be done because the cause of the problem is individual human behavior. Iowa, like every other state, directly or indirectly contributes to many of the problems discussed. How-

RON JOHNSON

Iowa's fisheries are not relied upon to feed a hungry population and consequently are not over-fished as in other parts of the world. However, they are threatened daily by contamination problems -- particularly nonpoint source pollution.

ever, Iowa is rapidly becoming the model for how individuals can solve global environmental problems through environmentally ethical behavior.

Iowa is one of the first states in the nation to recognize that the cause of the problem must be addressed. Toward this end, the state has undertaken some innovative and successful programs that rely on individual actions to solve environmental problems. The state's commitment of resources and determination, if adopted nationally, would have a significant impact on global environmental quality.

The Iowa Groundwater Protection Act and the Iowa Bottle Bill focus attention and efforts on preventing contamination of the environment. Actions taken by citizens are economically advantageous -- often up front, always in the long-run -- because the state avoids the cost of having to clean-up resources or constantly seek new ones. Preventing contamination is only part of Iowa's approach to environmental protection.

The Resource Enhancement and Protection Act commits financial support to natural resources. The program insures resources will not be depleted, but rather sustained for this and future generations.

Another aspect of Iowa's approach is environmental education. The state is committed to a high quality of education and a part of that quality is the assurance that future generations realize the importance of living as a part, not apart, of the ecosystem. Survival for our children and their children rest with their understanding that the earth is a small singular planet that supports life and we cannot afford to dispoil it.

Homo sapien means "wise man" and Iowa's environmental programs are intent on involving citizens who fulfill that meaning and have learned something from Ephesus.

In 1989 Iowa took on the task of identifying major environmental issues to address in the coming decade. Through a series of public meetings held around the state, the "Governor's Environmental Agenda for the 1990s" was formulated. The following pages focus on six of these major environmental problems facing Iowans.

Rick Kelley is an environmental specialist in groundwater programs. He is located in the DNR's Des Moines office.

TAMMRA K. PAVLICEK

Because toxic substances can leach from landfills down to groundwater supplies, special care must be given to disposal of hazardous wastes. The Department of Natural Resources has initiated a toxic cleanup day program helping Iowans dispose of paints, solvents, pesticides, waste oil, unused chemicals and other similar household hazardous substances.

Nobody made a greater mistake than he who did nothing because he could do only a little.

-- Edmund Burke

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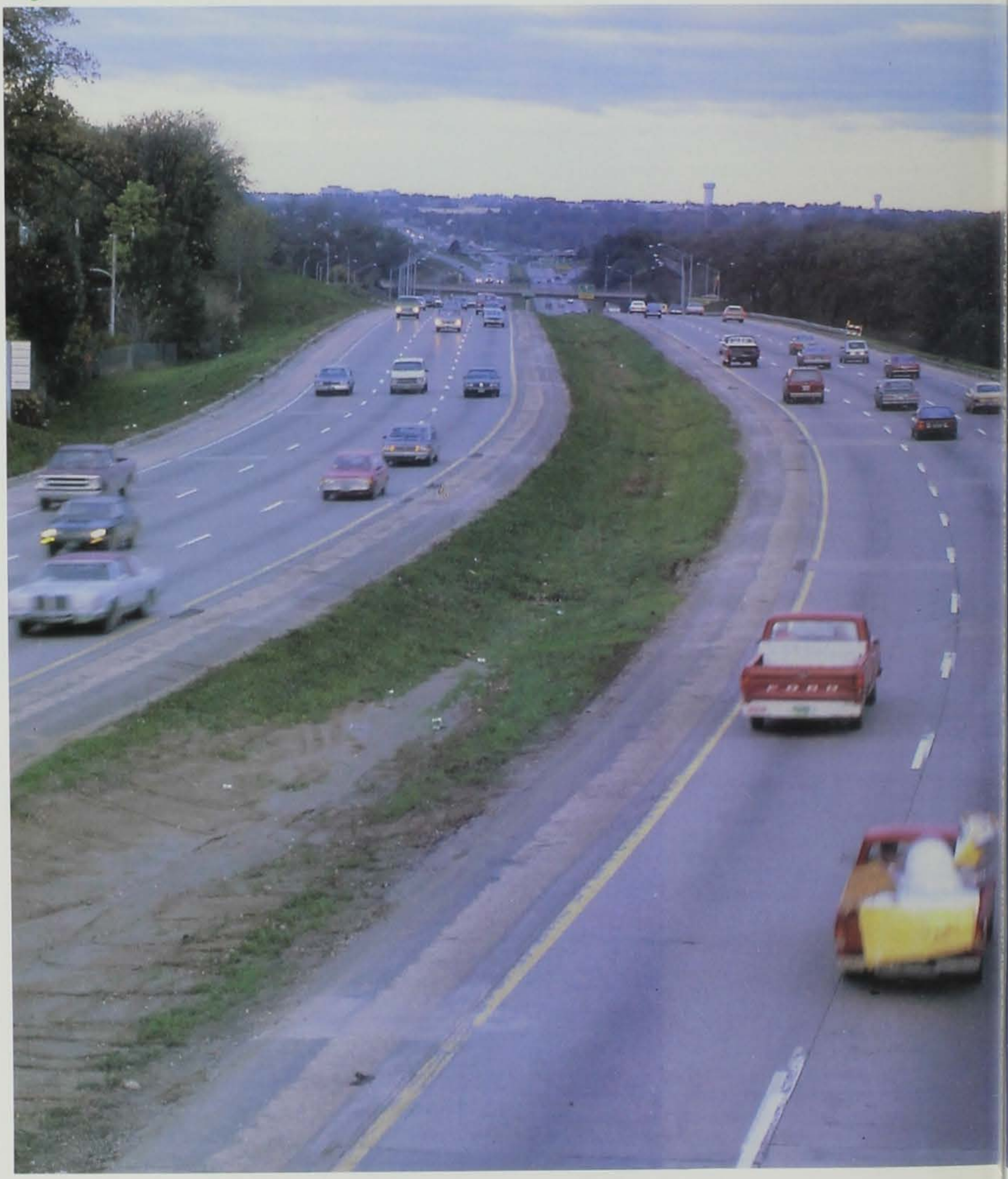


LYNN BETTS, SOIL CONSERVATION SERVICE

In Pursuit of Efficiency

Good news! Boosted by concern for the environment, Iowa is pursuing energy efficiency. It has become clear that not only economic health, but the health of our environment is inextricably linked to the production and consumption of energy. It is a clear progression. For example, installing efficient lighting reduces electric use which leads to less production, which means less coal being burned and less emissions, leading to reduction of air pollution, acid rain and global warming.

Although many improvements in energy efficiency have been achieved since the first Earth Day, there is still much more we can do. Substantial energy efficiency and electricity management savings will come from many small improvements. These improvements include wider applications of known technologies, taking new technologies out of the lab and putting them to work, and developing new, unheard of ideas. There are opportunities for improvements by homeowners, business and industry leaders, motorists — all of us. Over the next 10 to 20 years, these improvements are expected to yield up to 25 percent reductions in power plant needs and overall energy use, as compared to what would be needed without efficiency improvements.

A change in our thinking about the "cost" of energy will help us choose efficiency. First, energy prices do not fully reflect all the environmental and social costs associated with producing, transporting and using energy. The costs of acid rain and global warming are not now included in the prices of fossil fuels and electricity. The cost involved in providing national security relating to energy (a Mediterranean fleet, a national strategic petroleum reserve) and the cost of interest on a national debt caused primarily by the need to purchase foreign oil are not reflected in the price we pay for energy. If government ever figures out what energy is really costing us, efficiency gains could be phenomenal. Incorporating these "hidden" social costs could make investment in innovative energy efficient technologies more attractive.

Second, we need to emphasize "life-cycle" costs rather than just the initial price we pay for energy equipment and materials. Life-cycle cost analysis compares the total cost of installation, maintenance and operation over the useful life of the energy measure. A more efficient appliance or building insulation system may cost more to begin with, but will save money in energy costs over the long run. As building owners, we need to become more involved in these purchase decisions and not let builders or designers who, unless you tell them energy savings is important to you, may install lower-initial-cost items under the pressure of meeting overall budget demands.

Residential efficiency is the most often talked about subject because it touches everyone. Iowa is not making efficient use of its energy resources. Per capita, Iowans use more energy in their homes than people in 40 other

by Phil Svanoe

states, including Minnesota and Wisconsin with similar climates. For the past 20 years, homeowners have experimented with active solar heating panels on roofs, passive solar systems and earth sheltered designs. All of these approaches have had limited acceptance with mixed results. However, these home-building strategies have been replaced with a more simple and fundamental strategy called super-insulation. Using the life-cycle-cost approach for energy decisions, this strategy incorporates insulating heavily in combination with "tightening" the house. This strategy is coupled with use of exhaust fans to extract humidity from bathrooms and kitchens and to bring in fresh air. Existing construction is retrofitted by using a blower door to measure the air tightness of the house and then plugging (caulking, patching, insulating) the leaks. Walls and ceilings are insulated to the extent feasible and practical.

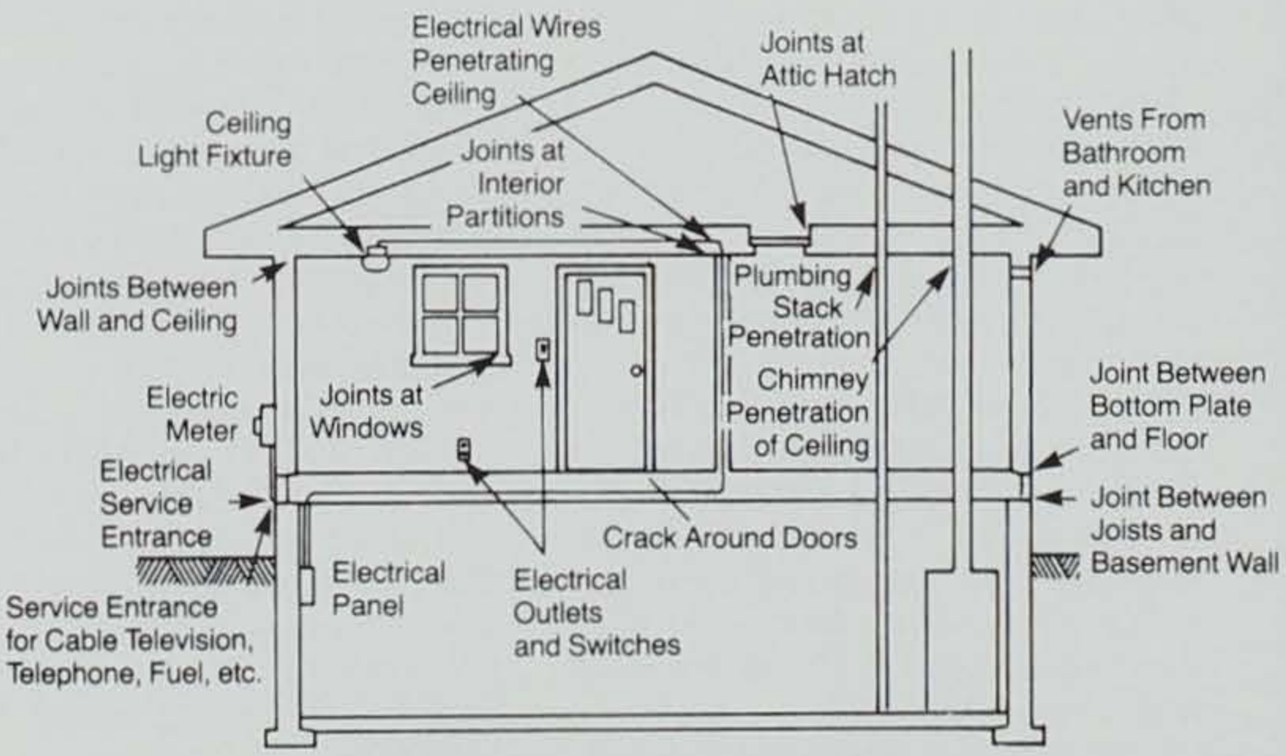
Because of the greater intensity with which energy is used in the commercial and industrial sectors, efficiency in these areas offers a greater potential. The Iowa Department of Natural Resources has calculated that, in Iowa, efficiency improvements amounting to $300 million are needed now for public buildings alone. This analysis is based on cost-effectiveness being defined as efficiency improvements whose energy cost savings will pay for the capital costs within six years. This also means that public institutions can finance the total cost of these improvements out of the energy cost savings resulting from the improvements. Comprehensive programs to assist public institutions with building energy efficiency are provided through the Iowa DNR.

As mentioned, the private commercial and industrial sector has even greater potential. Figures indicate Iowa ranks 32nd in the U.S. for use of energy for industry. The DNR estimates that if private industry were to use the same six-year simple payback criteria, there would be $2.5 billion in needed cost-effective efficiency improvements, resulting in a 15 percent savings in heating, cooling and ventilating, and lighting costs. There is little mystery involved in the technologies. Many involve improved design of conventional heating and cooling technology. Lighting efficiency improvements and computerized energy management systems provide the greatest efficiency gains.

There are many energy-conscious builders, architects and engineers in Iowa. There is a growing consciousness of energy efficiency among these groups. However, several market impediments keep these professions from making or specifying life-cycle investments. Currently, the resale market does not fully recognize the benefit of life-cycle costs when appraising values of properties. The development of building energy ratings would go a long way to increase the awareness of building owners of the importance of life-cycle cost accounting for energy. In addition, the inclusion of building

you can help

Areas Where Air Leakage Occurs



The illustration points out areas of frequent air leakage. Typically, air leakage amounts to 30-40 percent of a heating bill, with windows and doors responsible for about 15 percent of total leakage. Contrary to popular belief, windows are not the largest source of heat loss. Rather, poor insulation and loosely connected joints are the key culprits. A home should be sealed, then insulated to ensure comfort and save wasted energy dollars.

For further information on making your home more energy efficient, write of call the DNR for a copy of the *Energy Factsheet: Home Energy Checklist.*

For more information on energy-related issues, subscribe to the *Iowa Energy Bulletin*, Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034, (515)281-8665.

energy cost in the calculation made by banks when making loans would be a step forward. Iowa intends to implement these two programs.

We will likely see more energy-efficiency rebates and incentives by our gas and electric utilities in the future. Utilities are changing their attitudes toward providing energy efficiency programs to customers because state legislation is being proposed to allow utilities to break even and even make some money on reducing demand for energy. Until now, utility rates and allowed revenues have been primarily based on energy sold. It will become profitable for utilities to encourage efficient behavior in its customers.

Federal efficiency requirements for new automobiles over the past 15 years have saved more energy and reduced greenhouse gas emissions more than any other activity during this time. However, much more can be done. Fuel efficiencies of 50 miles per gallon and greater without reduction in size and comfort are being demonstrated by all major vehicle manufacturers. These vehicles make greater use of very light synthetic structural materials. While we wait for these advancements to be marketed, we should buy the most efficient cars available today. Currently, Iowans drive cars averaging 12.4 miles per gallon, making Iowa 46th among the 50 states. We can also use ethanol-blended fuels which provide a market for our corn crop and make fuel cleaner-burning. The development of advanced communication systems is ushering in the ability to go to work at home or just about anywhere and be connected through computer image and sound.

With stable energy prices over the past five years, energy efficiency has not been driven by fear of rising prices or diminishing supply. Many have forgotten the shortages and price flare-ups of the 70s and early 80s. Although prices will inevitably rise at a rate faster than inflation due to growth in world demand for energy, efficiency in the use of energy can be improved now even with current costs and short finance schedules. It is in our own best short-term interests to do so. Energy efficiency is a win-win situation. We help ourselves economically while we help to protect the environment.

Phil Svanoe is the chief of the department's energy bureau.

RANDY MARTIN

Bringing Solar Technology "Out of the Lab"

A new solar technology may have wide application. A flexible film developed by a joint Iowa State University/3M Company research project can generate electrical power from the sun's rays. The thin, lightweight film can be wrapped, folded and rolled.

A new company, Iowa Thin Film Technologies, has been formed in Ames to market the solar film. With a NASA grant, the company's first use of the technology may be on a mission to Mars. The film also can have uses on Earth to recharge batteries, charge electric fences and power toys and radios.

By first measuring a house for tightness, older homes can be retrofitted using the super-insulation strategy. Leaks are then caulked and patched and insulation is added to the walls and ceilings.

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you can help

On a national level, the cars we drive account for 55 percent of the air toxics emitted into the atmosphere. Each car driven emits approximately five tons of carbon dioxide annually. With 127 million cars on U.S. roads today, 635 tons of carbon dioxide are released into the atmosphere each year. As individuals, we can have a significant impact on this problem and not only improve air quality but reduce energy use.

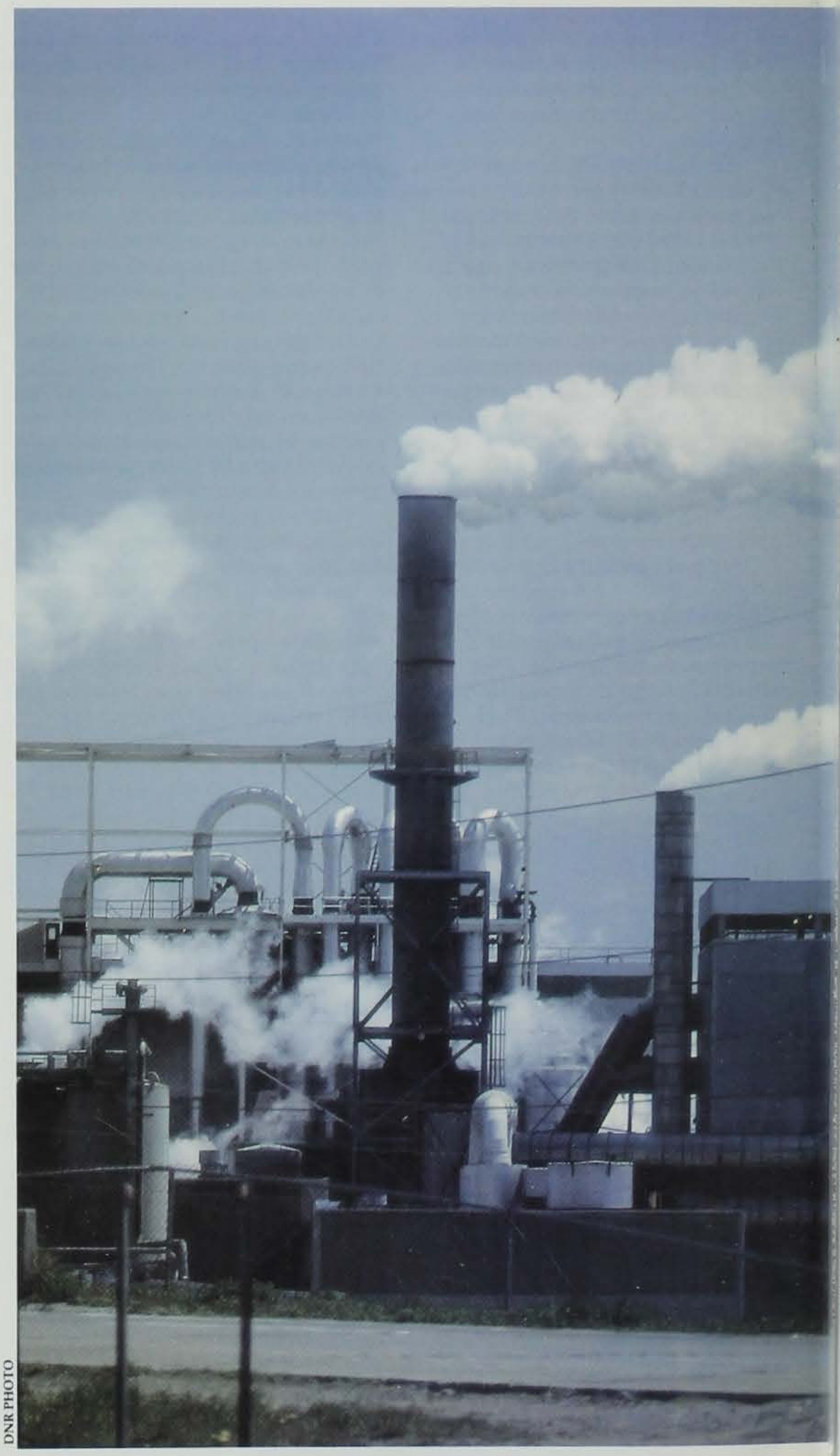
◆ Buy the most fuel-efficient car possible. Heavier models use up to 50 percent more fuel than lighter cars. Try to find a vehicle with a rating of 40 miles per gallon.

◆ Have your car tuned at least every six months. According to the EPA, the average car becomes five to eight percent more fuel efficient after a tune-up.

◆ Use unleaded gas, or better yet, an unleaded-ethanol blend. High levels of emissions from leaded fuels contribute not only to environmental problems but health problems as well.

◆ Car air conditioners are a major source of chlorofluorocarbons (CFC) emissions in the U.S. Installation of a car air conditioner releases 2.5 pounds of CFCs into the air and each time an air conditioner is recharged an additional pound of CFCs is released.

◆ Use public transportation, car pool or avoid driving whenever possible.



DNR PHOTO

A Breath of Fresh Air

When the words "air toxics" are mentioned most people think of Bhopal, India, where a release of deadly gas from a Union Carbide plant killed hundreds of people and left thousands injured in 1986. Fortunately, Iowa has not experienced such a tragedy. However, nearly everyone is exposed to toxic contaminants through the air we breath daily.

As we consider all the problems facing us on Earth Day 20, clean air should be high on the list. Air toxics and global warming are relatively new problems which did not get a lot of attention on the original Earth Day. As we become more knowledgeable about environmental problems, we discover we need to know a lot more before we can effectively solve these problems. We also learn these problems are very complex and, at times, confusing.

One of the difficulties encountered in attempting to understand how air toxics impact our environment is in measuring them. It is much easier to grab a sample of water and analyze it than it is air. It is also very difficult to determine what effect low levels of toxics may have upon the public health over a long period of time, as well as what impact multiple air toxics may have on public health.

In the nation's urban areas so many air toxics intermingle it is called "urban soup." According to a study done by the Environmental Protection Agency, the breakdown of the sources contributing to the "urban soup" included 55 percent from road vehicles, nine percent from chrome platers, seven percent from the use of solvents, six from wood smoke and five percent from air conditioners.

The Iowa Department of Natural Resources has been looking at air toxics for several years. A survey was recently conducted of 64 facilities; 22 in Polk County and 42 throughout the rest of the state.

In Iowa, the largest amount of any chemical released is a common household and farm chemical -- ammonia. Two facilities release more than five million pounds annually. Ammonia is dangerous because it can burn a person's eyes and respiratory system.

The next two chemicals with the largest amounts emitted annually are toluene and xylene -- common solvents. A total of two million pounds are released annually.

In looking at the impact of toxics, not only must the amount being released be considered, but also the level of toxicity of each chemical. Relatively small amounts of dioxins could have a much greater impact upon the public health than ammonia. Besides amounts and toxicity, it is necessary to know the level of concentration of a chemical before beginning to understand the impact that one chemical can have upon an individual.

This information serves as the basis for the DNR's primary effort to deal with air toxics. For the last two years, all new air permits are reviewed to determine if toxics are present and if the proposed emissions meet acceptable concentrations. No permit is issued if standards are exceeded.

Facilities are required to report each year on the hazardous chemicals they handle and discharge into the environment. This information is referred to as the "right-to-know" provision and is available to the public. The information frequently serves as the basis for planning done by local emergency planning committees. These committes are responsible for designing actions to be taken in th event of an accidental release of chemicals.

We are finally beginning to get some idea of where hazardous chemicals are located and a rough idea of what chemicals are being released into the environment. The Governor has proposed legislation for Iowa that will expand efforts to regulate air toxics and cover, not only new sources, but existing sources as well.

Air toxics are being given a great deal of attention at the national level, as well. The revision of the Clean Air Act is now being considered in Congress. This important piece of legislation will determine the direction of air toxics controls nationally. Various interest groups are working hard to shape this particular provision to their satisfaction.

As we move into the 90s, complex problems, such as air toxics, can be solved if we are willing to make some hard decisions. The quality of life in Iowa and the health of all Iowans are dependent upon these decisions.

Pete Hamlin is chief of the department's air quality bureau in Des Moines.

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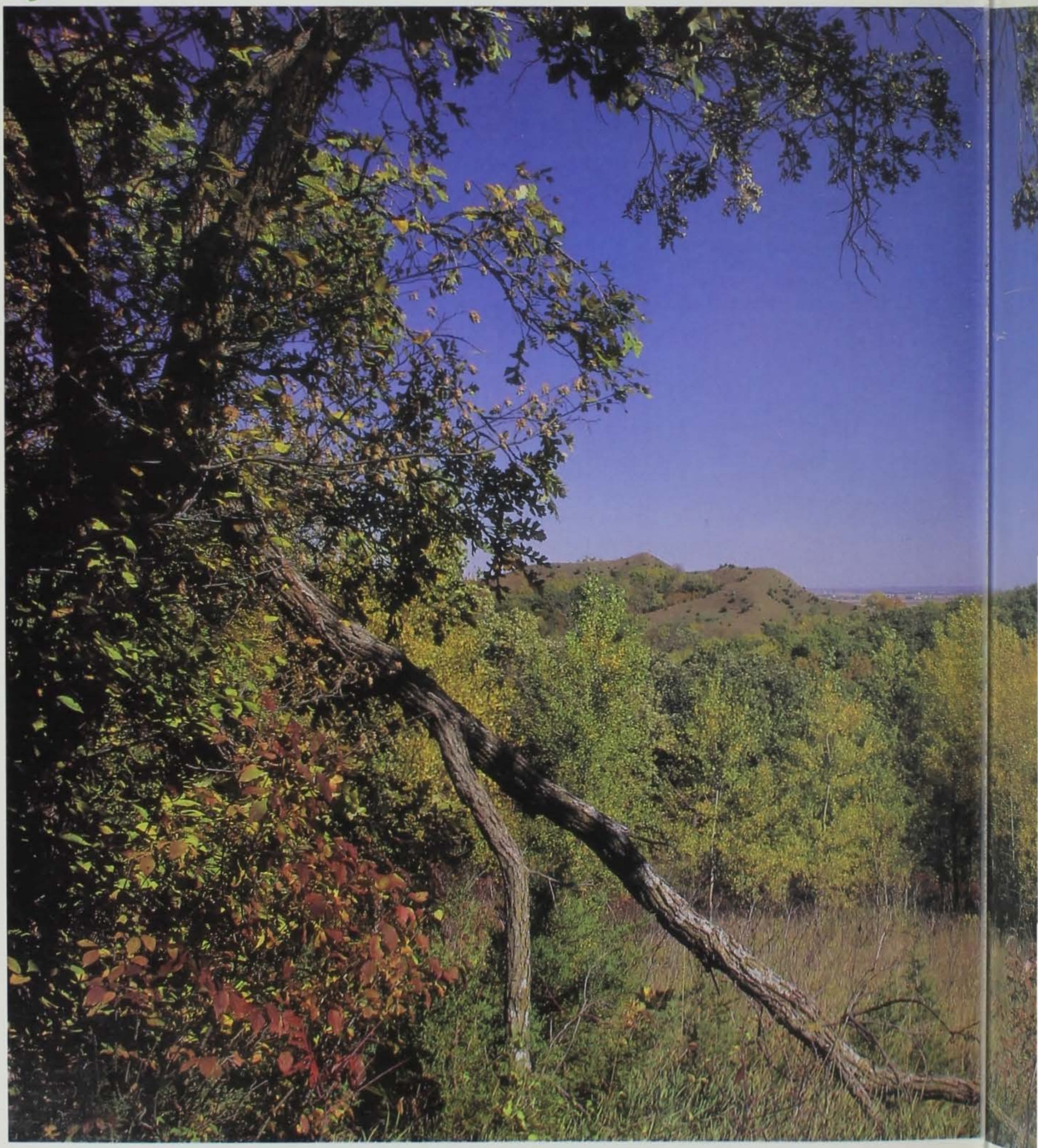
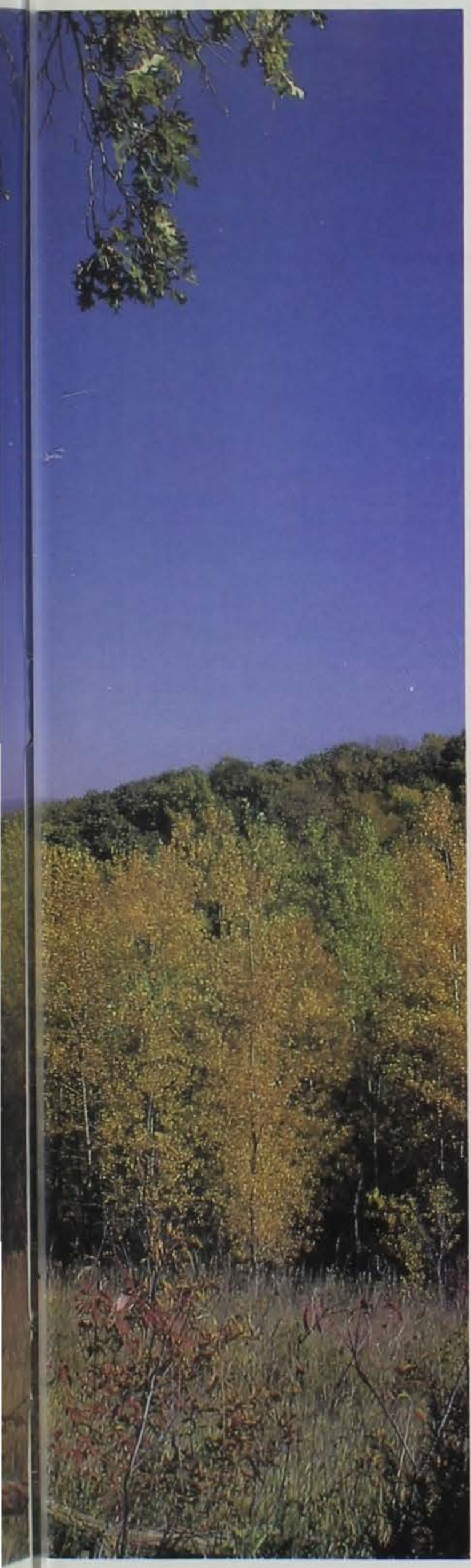
by Pete Hamlin

Earth Day 1990





RON JOHNSON

Preserving A Heritage

Imagine the sights of early explorers as they entered Iowa. Before them spead a vast horizon of grasses and flowers dotted by sparkling marshes, oak savannas and rivers pressed between corridors of hardwoods. However, under this "wasteland," as it was once perceived, lied a fertile treasure. And, once the secret treasure was discovered, within a few decades much of the tallgrass prairie was gone. Much of the timbered eastern and southern parts of the state were converted to cropland and more were destroyed by grazing. Wetlands were drained by the thousands, as the land and nearly everything on it were conquered by the pioneer spirit.

Iowa has lost 99.9 percent of its native prairie -- the source of this state's fertile soil. Only a remant 20,000 acres remain. Naturally, as the protective covering of prairie was removed, rich soils lay exposed. With our prairie has gone 50 percent of our top soil.

The glaciers that left this state with a landscape dominated by prairie also left an extensive wetland complex of marshes, glacial lakes and prairie potholes. Today, only about 35,000 acres of Iowa's prime wetlands remain, a dramatic loss of approximately 98 percent. While some of Iowa's potholes have been lost to urban and industrial expansion, most have been drained and converted to agricultural production.

Although prairie grasses were more abundant when the first settlers arrived in Iowa, hardwood forests lined the river corridors and remnant evergreen species were found in secluded habitats. At the time of settlement, Iowa's landscape included approximately 6.7 million acres of woodlands. Today, only about 1.5 million acres of forest area remains -- nearly an 80 percent loss.

And with this loss of habitats has gone close to 100 species of Iowa plants and animals.

Must we lose everything? No. During the first Earth Day in 1970, Iowa was entering a farming boom, and environmental issues, such as habitat loss, took a back seat to agricultural production. Since that first Earth Day, major strides have been made to create a balance between economy and environment -- to see to it that we preserve some of Iowa's natural heritage.

This year's Earth Day focuses on forest resources in Iowa. To help celebrate Earth Day and promote the value of Iowa's woodlands, the Department fo Natural Resources, in cooperation with the Iowa Nurserymen's Association and Iowa Bankers Association, is providing a *Trees for Kids* education module to sixth-grade teachers. Many classes around the state will be planting trees as a part of this program.

Many issues of concern today -- global warming, alternative energy sources, water and air quality -- are directly related to the treatment of our forest resources.

A recently drafted 1990 Forest Resources Plan identifies five high-priority goals for forestry in Iowa. They include increased education and awareness of forest benefits among Iowans, increased tree planting, improved management of rural and urban forest resources, increased public ownership of

by Julie Sparks

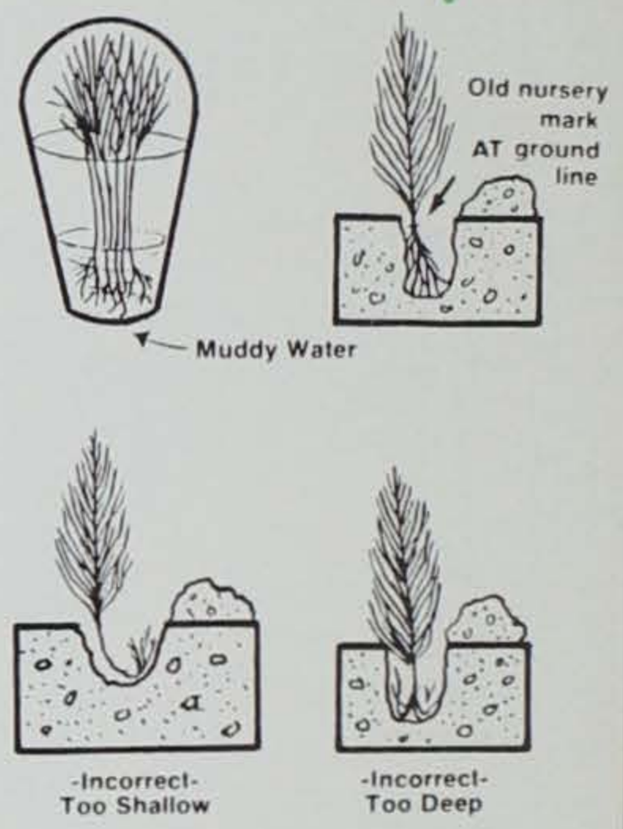
Earth Day 1990 you can help

Plant a Tree

Join school children this Earth Day as they plant trees arouund the state through the *Trees for Kids* program. Whether you plant a small tree or shrub, a small habitat planting or an entire windbreak, you will be doing your part in saving one of Iowa's valuable resources. Contact your local nursery for more information, or call the DNR's state forest nursery at (515)232-1161 to place a seedling order. (Limited stock remains at the state forest nursery.)

Proper planting techniques will help insure survival. Follow these basic tips for planting seedlings or bare-root stock.

- Regardless of the method of planting, it is most important to keep the tree roots damp at all times. Carry the seedlings in a bucket or planter boxes with enough water to cover all of the roots.
- The hole should be deep enough to prevent the roots from curling or bunching up. Long roots should be trimmed.
- Plant the seedlings in the ground at the same level they were at at the nursery. The bark on the trunk below ground level is generally lighter colored and smoother.
- Spread the roots around in the hole, place soil around the roots and pack firmly.
- Remember watering is very important.



The best time to plant a tree was 20 years ago, the second best time is today!

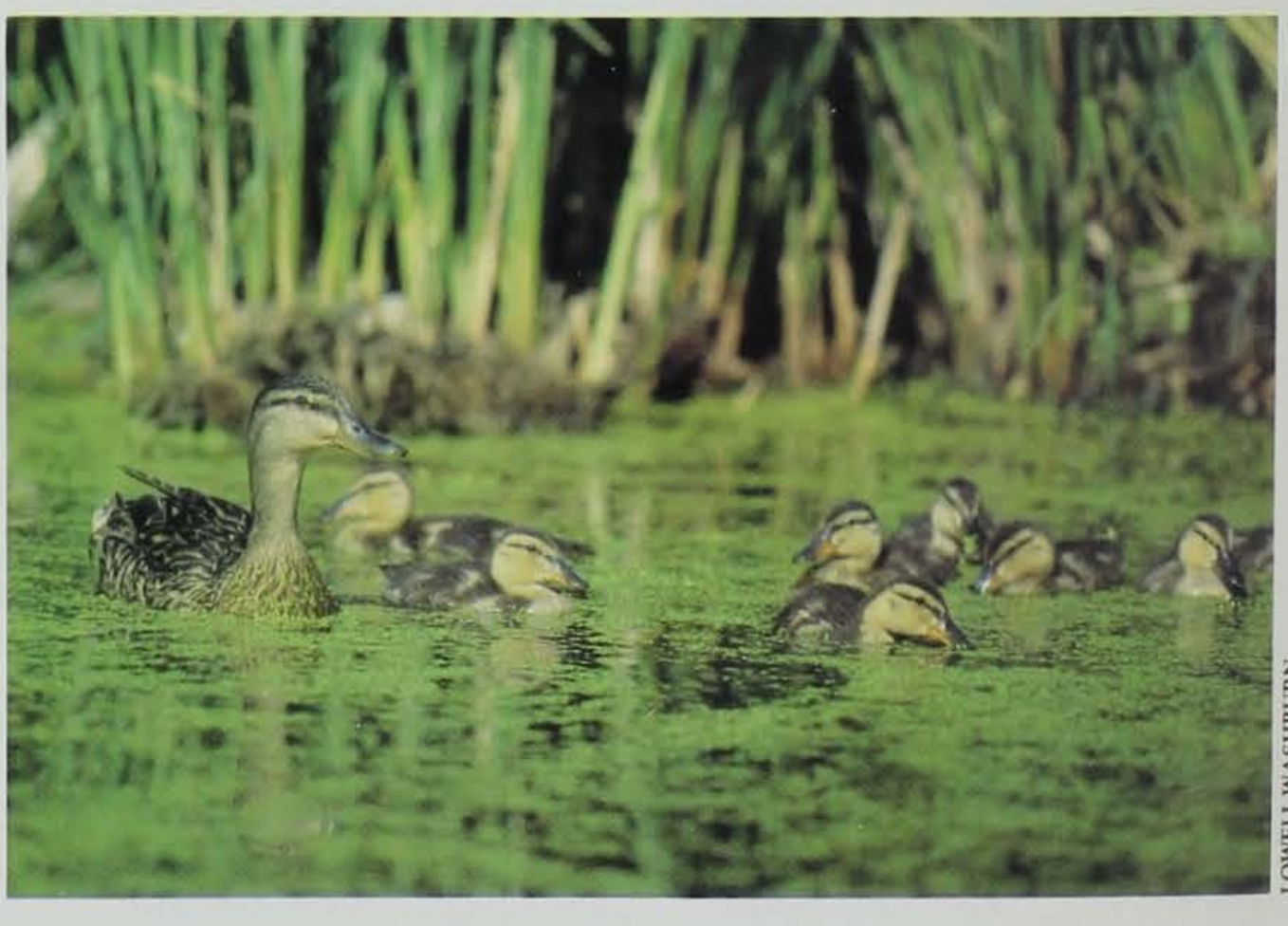
forests and expanded markets for timber.

Wetlands are another of Iowa's vital resources. They are some of the most productive wildlife areas, providing critical habitat for waterfowl and many other wildlife species. Many of Iowa's rare and endangered species can be found in our marsh systems.

The dramatic reduction in wetland habitat felt throughout North America and Iowa, has consequently reduced waterfowl numbers and recently prompted wildlife professionals in the U.S. and Canada to design a comprehensive plan to restore this resource. This initiative, called the North American Waterfowl Management Plan (NAWMP), began in 1987.

Iowa is cooperating with the NAWMP through the Prairie Pothole Joint Venture — a geographic division of the NAWMP.

Iowa's goals under the PPJV are to acquire a total of 30,000 acres of existing and restorable wetlands during the next 15 years, at a rate of 2,000 acres per year.



LOWELL WASHBURN

In Iowa, the goal for the Prairie Pothole Joint Venture is to acquire a total of 30,000 acres of land within 15 years, at a rate of 2,000 acres per year. Equally important is the acquisition of existing and restorable wetlands and their adjacent upland nesting habitat. In 1989, the third year of the Prairie Pothole Joint Venture, a total of 2,180 acres of wetlands and adjacent uplands were purchased. In addition, 263 acres of wetlands were restored on private lands in 1989.

Since 1987, Iowa has purchased 5,283 acres of wetlands and adjacent uplands, and has restored wetlands on 1,184 acres of private land. These wetlands are vital not only as wildlife habitat but for the environmental quality control they provide. Marshes absorb excess rainfall and snowmelt, recharge groundwater supplies and reduce flooding. They reduce runoff, thereby controlling soil erosion. Wetlands also filter excess nutrients and chemicals, improving water quality.

Of all the conservation programs available to Iowa, Iowa's Resource Enhancement And Protection (REAP) Act may be the best solution yet to the problem of habitat loss.

The act was passed by the General Assembly and signed by Governor Branstad in 1989. Over the next 10 years, a potential $200 million has been targeted for REAP projects and programs. The Open Spaces Program will reeive a major allocation of REAP money. This program will provide funding for acquisition and development of a wide variety of habitats -- with wetlands, forests, prairies and stream corridors receiving the major emphasis.

Another major share of the REAP money is distributed equally to each county. They are given the responsibility of choosing resource enhancement projects to fund in their areas. Public input channels have been set up on county and multi-county levels to insure private individuals' and conservation groups' convictions are considered concerning these local REAP projects.

The intentions of REAP have been clearly defined --

"The program shall be a long-term integrated effort to wisely use and protect Iowa's natural resources through the acquisition and management of public land; the upgrading of public park and preserve facilities; environmental education, monitoring and research; and other environmentally sound means. The resource enhancement program shall strongly encourages Iowans to develop a conservation ethic, and to make necessary changes in our activities to develop and preserve a rich and diverse natual environment."

Futher information on REAP is available through *REAP*, the bi-monthly newletter published by the Department of Natural Resources. To subscribe to the newsletter write the Department of Natural Resources or call (515)281-8653.

Assistance Available

Landowners have a variety of options for cost-sharing and technical assistance in restoring, establishing or protecting natural resources.

Conservation Reserve Program (CRP) -- Under the CRP, several cost-share programs are available for establishment of trees, native grasses, permanent wildlife habitat, field windbreaks and shallow water areas (marshes). Contact your ASCS office for further information.

Resource Enhancement And Protection program (REAP) -- Funding for individual landowners for a variety of forestry practices and native grass establishment exists through the REAP program. Cost-sharing is administered by the Department of Agriculture and Land Stewardship. Check with your district forester or Soil Conservation Service for more information.

Forests Incentives Program (FIP) -- The FIP program has cost sharing assistance available for forestry practices. Contact your district forester.

Agricultural Conservation Program (ACP) -- Assistance for the establishment of trees, tree stand improvment, site preparation and wildlife habitat is available from the federal government through the ACP program. Contact your ASCS office for more information.

Wildlife Shelterbelt and Wetland Restoration programs -- Assistance is available from the DNR for creating shelterbelts, and aid in restoring private wetlands is available from the DNR and U.S. Fish and Wildlife Service. Contact your local wildlife biologist for information on these programs.

Slough Bill -- Property tax exemptions may be available to private landowners for wetlands, lakes, forest cover, forest and fruit tree reservations, rivers, streams, wildlife habitat and native prairies. Your county assessor will know if the program is available in your county. Your local SCS, county conservation board, wildlife biologist or district forester can explain the program and help with the appropriate paperwork.

Forest Reservation -- Property tax exemptions are available for forestland of more than two acres. Applications are available at your county assessor's office.

Pheasants Forever -- Many chapters of Pheasants Forever offer assistance with funding, or provide seed, for food plots, winter cover and other upland habitat projects.

Technical Assistance -- County conservation boards, the DNR's wildlife biologists and district foresters, and SCS district conservationists can provide technical assistance on most habitat projects. In addition, they may have information on additional funding sources. Your local county conservation board may have tree planters and seed drills available for habitat projects.

Earth Day 1990

Wasting Away in the 1990s

ERWIN W. COLE, SOIL CONSERVATION SERVICE

The 1990s will be a decade of new challenges and opportunities for waste management in Iowa. The key to Iowa's success in managing our waste will be our ability to implement practices that are environmentally safe, publicly acceptable, economically feasible, and that make the best use of our resources.

In Iowa, about 3.5 pounds of solid wastes were generated per person per day in 1988, with approximately 85 percent of the waste disposed of in landfills. Approximately 3.5 thousand tons of hazardous waste was generated by industry, resulting in costly on-site treatment or disposal in other states' hazardous waste facilities. Much of the waste we put in landfills today will still be there in the year 2025 and beyond. As landfills become full and costs of waste disposal rise, using alternatives to landfill disposal becomes increasingly important. Iowans are realizing the "out-of-sight-out-of-mind" approach to waste disposal is no longer a sensible approach. We are also becoming increasingly aware of the fact that "wastes" are often valuable resources.

Iowa has built a foundation for improving waste management practices. Recognizing the environmental contamination, financial burdens and wasted resources associated with reliance on landfills, Iowa has established an "integrated waste management" approach for solid and hazardous wastes. The approach follows a hierarchy which favors *source reduction* to decrease the volume or toxicity of waste that is produced. Next on the hierarchy is *recycling* or *reuse* of waste. *Incineration for energy recovery* and *incineration for waste volume reduction* are lower alternatives on the hierarchy because of potential risks. Finally, *landfilling* is the least-preferred strategy because of the potential costs and risks to health, safetyand the environment. However, landfills will always be necessary for wastes that cannot be reduced, recycled or burned, and for the ash residue generated by incineration.

Using the best "mix" of these alternatives will be a critical issue for Iowa throughout the new decade. In 1988, the Iowa General Assembly established a goal to reduce the amount of materials existing in the waste stream through source reduction and recycling. The volume of materials in the waste stream is to be reduced 25 percent by July 1, 1994, and 50 percent by July 1, 2000.

To meet this goal it is important to understand the source reduction and recycling potential for each component of the waste stream. What is in our trash? Although it varies from community to community, the figures below show the components of the municipal waste stream nationwide:

- 35.6% -- paper and paperboard
- 20.1% -- yard wastes
- 9% -- rubber and leather, textiles, wood, other
- 8.9% -- food wastes
- 8.9% -- metals
- 8.4% -- glass
- 7.3% -- plastics
- 1.8% -- miscellaneous organic waste

by Gaye Wiekierak

Earth Day 1990

Experts estimate that as much as 60 to 80 percent of the solid waste stream can be recycled. Because only about 10 percent of this waste stream is presently recycled nationally, there is great potential for recycling. Paper, yard wastes, glass, aluminum and other metals, used motor oil, tires and plastics are all examples of recyclable materials. Developing and expanding markets for such materials will be critical in the 1990s.

Source reduction -- reducing the amount of waste that enters the waste stream -- can also be applied to many of the materials in the solid waste stream. According to a 1988 study by Franklin Associates, Ltd., containers and packaging are extremely important parts of the national municipal waste stream. Containers and packaging increased from 24 million tons in 1960 to 42.7 million tons in 1986,

RON JOHNSON

Reducing the volume of waste going to a landfill is the best solution to the solid waste problem. Recycling is one way to reduce this volume. Paper and paperboard, although recyclable, account for the largest percentage of waste disposed of in landfills.

you can help

Composting Your Yard Wastes

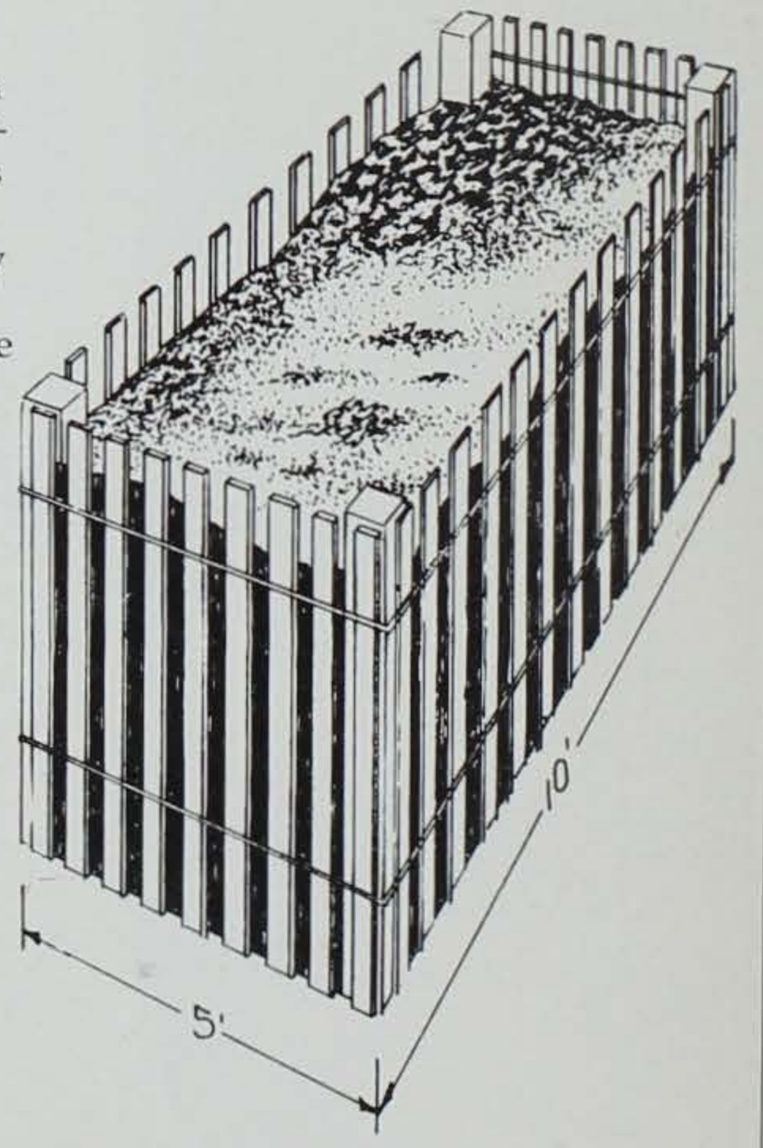
The materials used in composting make up 20 to 30 percent of all household wastes. By composting these materials you eliminate the costs of disposal at a landfill, save limited landfill space, protect the environment, and improve your own soil all at the same time. Improving your soil is the first step toward improving the health of your plants.

There are a number of plant material around the yard and garden that can be used in the compost pile. Some of these are leaves, lawn clippings, weeds from the yard and garden, hedge clippings, straw, mulch raked from flower beds, and sawdust.

There are no special procedures to follow in preparing compost. With a little experience, each individual will adapt procedures to meet their own needs. An out-of-the-way area that can be screened from view is preferable. It should be convenient as well as accessible to water.

A rectangular pile is usually easiest to handle. A 30-foot piece of snow fence would make a compost pile 10 feet long and five feet wide. A rectangular trench or framework of boards will serve the same purpose. The enclosure could be divided across the middle to give two sections of equal size. One side can be used while the other side is in the process of decomposition.

For further information, write or call the Iowa Department of Natural Resources for a free brochure entitled *Composting Your Yard Waste in a Holding Bin.*



and they are projected to increase to 50 million tons in 2000. Reducing and improving packaging will be important source reduction strategies. It is equally important, however, to pay attention to reducing the waste that comes from paper products, other "disposable" items and yards.

Reducing the volume and toxicity of materials in the industrial hazardous waste stream and the household hazardous waste stream must also be pursued. Activities can take many forms, from substituting non-toxic solvents in industrial production processes to purchasing alternatives to toxic products for the home.

Who is responsible for improving waste management in Iowa? We all are. There are many opportunities for Iowans to get involved with establishing alternatives to landfills and decreasing the air, land and water degradation associated with improper or less-preferred methods of waste management.

All levels of government should set good examples by recycling and by purchasing recycled or recyclable products.

State government's responsibilities include assisting local governments with developing comprehensive plans for integrated waste management, facilitating waste reduction and recycling activities for all sectors of the state and increasing the amount and quality of information available to schools, governments, private businesses and general public.

Local governments should plan and implement a "mix" of waste management alternatives that will most effectively handle their waste streams. They should work in partnership with waste management companies to get the job done. An important role of local governments will be to increase public awareness and participation in waste issues.

Industry's responsibilities include producing consumer goods that can be disposed of in environmentally safe ways, improving product testing and instructions for disposal, and preventing pollution at the source by reducing the use of hazardous materials in the production process or by recycling materials in-house or with other companies.

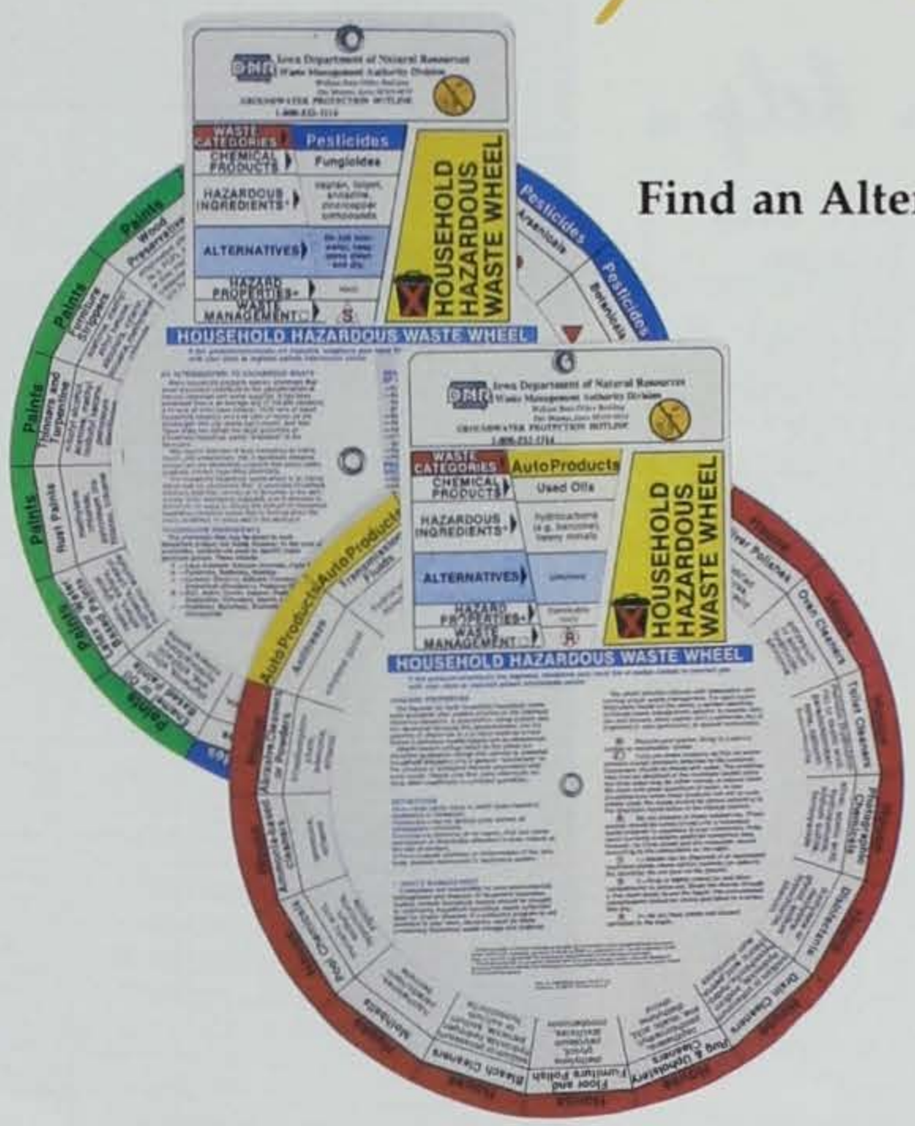
Retailers are responsible for providing accurate, accessible information to consumers about the proper use and disposal of household hazardous materials.

Citizens can play a number of important roles and can be catalysts for positive changes. As citizens, we have a responsibility to learn about the products and packaging we buy and the waste we create. We can use safer alternatives to household hazardous materials and can increase our knowledge of how to dispose of materials correctly. Citizens are urged to voice concerns to government and industry and to participate in waste management planning and activities through local organizations and local government committees.

Realizing shared responsibilities and working together to achieve the goal of reducing waste and developing alternatives to landfills will be perhaps the biggest waste management challenge of the 1990s. But shared responsibility will also lead to shared benefits.

you can help

Find an Alternative



For a copy of the *Household Hazardous Waste Wheel*, send $1.25 to the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034, (800)531-1114.

Gaye Wiekierak is a program planner with the department's Waste Management Authority Division in Des Moines.

Earth Day 1990

-you can help-

◆ Plug any abandoned wells on your property. Because they are not maintained, unused wells are a potential source of direct contamination into an aquifer. The DNR operates a grants-to-counties program which provides cost-share funds for well plugging and well testing. Contact the DNR for further details.

◆ Reduce the use of fertilizer and pesticides around the home. Although households contribute only a small amount to the total agricultural chemical use in Iowa, the concentration and frequency of use may be much greater than in the agricultural community. Consult gardening books for safe alternatives to garden sprays. For around-the-house alternatives, contact the DNR.

◆ Report all spills of hazardous chemicals promptly -- call the DNR emergency response number (515)281-8694.

◆ Wells should be tested regularly for bacteria and nitrates. However, there are many chemicals that can enter groundwater that will not show up on a routine water test.

◆ Subscribe to *Iowa's Environmental Update* -- call the DNR at (515)281-8874.

DNR PHOTO

Lisa Smith is an environmental specialist in groundwater programs. She is located in the DNR's Des Moines office.

A Question of Quality

Water quality in Iowa represents both our success and failure in the protection of environmental quality. At the time of the original Earth Day in 1970, enormous quantities of industrial pollutants and municipal waste were being discharged directly into our lakes, rivers and streams. Water from many of these lakes and streams was unfit for human consumption and could not sustain normal aquatic life. Since the Clean Water Act was passed in 1972, significant progress has been made in eliminating these sources of pollution from surface waters in Iowa.

In 1990, however, we face an even more complex problem than we did 20years ago. Although point source discharges are now controlled, both industrial and agricultural pollutants are entering our lakes and streams from nonpoint sources. In addition, we are also seeing the deterioration of groundwater quality, a resource once thought to be unaffected by human activities. Beginning in the 1980s, increased monitoring in Iowa and other states revealed groundwater contamination by agricultural and industrial chemicals. These pollutants have been traced to many human activities — application, handling and storage of agricultural chemicals; transportation, storage and disposal of hazardous substances; landfills; underground storage tanks and pipelines; lagoons and septic tanks; and improper well maintenance and closure — yet the precise mechanisms of contaminant movement to groundwater supplies are not always well understood.

The discovery of widespread groundwater contamination in Iowa was, and still is, a major concern. Eighty percent of all Iowans (almost 100 percent in rural areas) depend on groundwater for drinking water, and more than three-fourths of all the water used for livestock, irrigation and commercial purposes comes from groundwater. A recent study indicated that water from nearly half of 686 rural drinking water wells surveyed in Iowa contain groundwater contaminants that exceed recommended health levels. Most public water supplies are required to monitor for very few organic compounds, and small supplies and private well owners cannot afford the substantial cost of analyzing for these compounds. Even in situations where contamination has been documented, removal of the pollutants is often not technologically or economically possible. Conventional water treatment systems were not designed to remove organic compounds and nitrates, and construction of new facilities is economically prohibitive. Private well owners do not have the ability to treat groundwater as public water supplies do, nor can they afford the cost of an alternative water supply, if one even exists. Treatment of groundwater also does nothing to address the impacts on other aquatic and terrestrial life, nor does it protect areas not yet polluted.

Therefore, a policy of preventing contamination before it occurs is the most environmentally beneficial and cost-effective method of protecting groundwater resources both in Iowa and nationwide. Iowa has taken this preventive approach with respect to groundwater resources, by passing the Groundwater Protection Act in 1987. This law focuses on preventing further contamination, and funds research, education, and demonstrations to identify "best management practices." These practices are merely more efficient and environmentally beneficial ways of manufacturing goods and services, farming and running households. Some of these more efficient techniques and practices have been adopted by Iowans; examples are reducing unnecessary use of nitrogen fertilizer and pesticides, and participating in toxic cleanup days to properly dispose of household hazardous waste.

However, all Iowans will need to make a much stronger commitment to preventing contamination in the future if the state's water resources are to be protected for future uses. Iowa and the nation has made some progress in eliminating point source discharges into our surface waters, but the tougher problem of nonpoint source contamination of both ground and surface water by agricultural, industrial and municipal sources must be seriously addressed. This will have to include changing some long-standing practices, such as learning to compost and recycle instead of disposing of our waste in landfills; reducing or eliminating use of toxic chemicals on the farm, in factories and around the home; and properly handling and disposing of the chemicals we must use.

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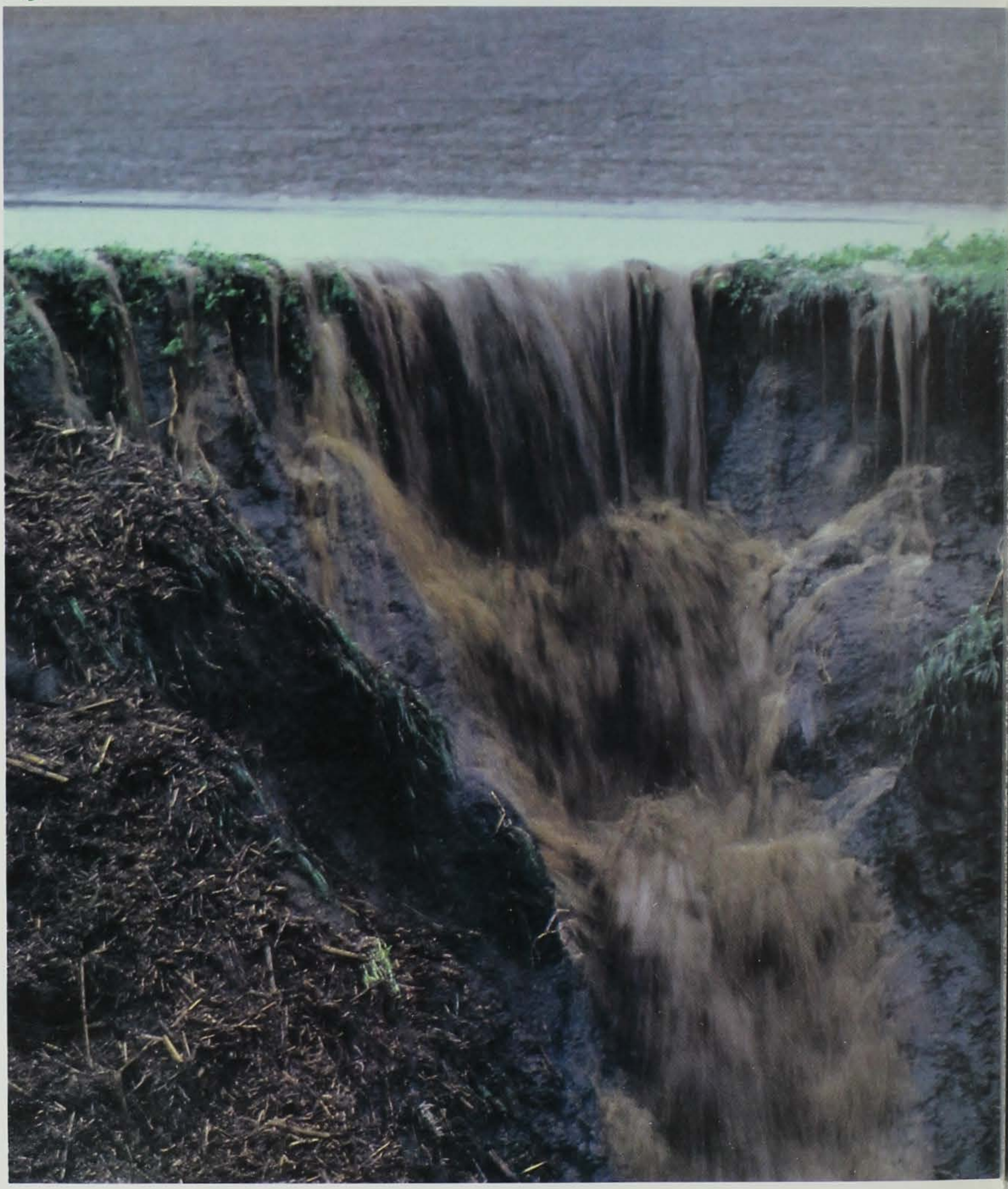
by Lisa Smith

Earth Day 1990



LYNN BETTS, SOIL CONSERVATION SERVICE

Getting at the Source

A 1988 Department of Natural Resources' assessment found that nonpoint source pollution was impairing the water quality of essentially all of Iowa's significant rivers and streams, and 65 percent of the 236 lakes evaluated. Pollutants such as sediment, nutrients, pesticides, bacteria, organic matter and metals from nonpoint sources were affecting aquatic life, swimming, water skiing, boating, fishing and use as drinking water.

Nonpoint source pollution is water pollution that does not come from a localized industrial or municipal source, point or pipe. It is water contamination by runoff from fields, streets, yards, industrial areas, construction sites, and other surfaces that receive rainfall and contribute pollutants that impair water quality. Because of its widespread origins, nonpoint source pollution is often uncontained and uncontrolled. It enters surface waters in untreated runoff from extensive areas within stream, river, or lake water sheds.

In the 1988 DNR assessment, sediment was identified as the most important nonpoint source pollutant of Iowa streams, rivers and lakes.

Consequently, the assessment identified agriculture as the predominant source of nonpoint pollution in the state. Agricultural nonpoint sources were having major impacts on the water quality of 93 percent of the assessed stream miles and 156 of 236 assessed lakes. On a statewide basis, urban runoff was a distant second in importance and was judged to be causing major pollution impacts to eight percent of assessed stream miles and 19 of the 236 lakes. However, urban runoff can have major localized impact.

An understanding of significant factors that have influenced Iowa's nonpoint source pollution problems in the past requires consideration of the role that federal agricultural policies and programs have played. For example, federal subsidies for feed grains have encouraged farmers to grow corn and soybeans on highly erosive land resulting in elevated levels of sediment, nutrients and pesticides reaching surface waters. No doubt, this program has also contributed significantly to the increases in nitrate concentrations and pesticide contamination in the state's groundwaters.

In recent years, heightened awareness and improved understanding of the problem has led to expanded control efforts. For example, legislative and administrative changes made in recent years are making some federal agricultural programs more responsive to environmental protection needs.

Iowa has been addressing nonpoint pollution since 1975 when statewide water quality planning began. At the time, major emphasis was placed on control of agriculturally related nonpoint source pollution. This emphasis continues today. Control priorities include reduction of sediment, nutrients, pesticides and animal wastes reaching surface waters. Improved protection of soil resources, better management of fertilizers and pesticides, and improved storage, treatment and land application of

by Ubbo Agena and Bill Bryant

animal wastes are necessary to protect and, in certain cases, restore uses of surface waters.

The 1987 Iowa Groundwater Protection Act combines both regulatory and nonregulatory approaches to the protection of groundwater resources from nonpoint source pollutants. Many of the provisions of this legislation also contribute significant support to surface water protection efforts. As a result of the priority environmental issues are receiving in Iowa, the Legislature established a new Water Protection Program in 1988, providing support for water quality protection projects that address surface or groundwater problems.

State and federal support has made possible considerable progress in reducing nonpoint pollution of Iowa lakes. Control projects begun on 19 lakes have been completed for six and are ongoing for the other 13. Three new lake protection projects are to be initiated this year with state funding support.

State programs with major emphasis on the development, identification, and demonstration of improved crop management practices will provide significant water protection benefits. Pertinent ongoing programs include the Integrated Farm Management Demonstration Program, the Big Spring Basin Demonstration Project and ISU Leopold Center programs. This year's addition of the Model Farms Demonstration Program to the state's crop management demonstration efforts will expand the number of demonstrations in all regions of the state. The use by farm owners and operators of these programs, which aid in the transition to water-protecting fertilizer and pesticide management practices, is critical to nonpoint source control.

As follow-up to its 1988 nonpoint source assessment, the DNR has developed a state nonpoint source pollution control program. The program is being initiated using funds from the U.S. Environmental Protection Agency.

Through the program, the Department of Natural Resources will increase statewide public information efforts, including the development of new, effective educational materials. The animal waste management program will be expanded by the development of a network of animal waste demonstration farms and the production of educational materials to describe demonstration facilities and their operation. Significant support will also be given to implement specific nonpoint source control projects, one of which will address tree buffer strips to protect streams from nonpoint source pollution.

Ubbo Agena is an environmental engineer with the department's surface/ground water protection bureau.

Bill Bryant is an environmental specialist for the department's surface/ground water protection bureau.

you can help

Homeowners

◆ Keep litter, pet wastes, leaves and debris out of street gutters and storm drains -- these drain directly to lakes, streams and rivers.

◆ Apply lawn and garden chemicals sparingly and according to directions.

◆ Clean up spilled brake fluid, oil, grease and antifreeze. Do not hose them into the street where they can eventually reach local streams and lakes.

Farm Owners and Operators

◆ Use conservation tillage practices -- contour farm, include close-growing crops in your rotation plans, install terraces and other erosion-control structures.

◆ Reduce the amount of nitrogen applied to your fields. Use the newly developed late-spring soil nitrogen test to avoid unnecessary use of fertilizer. Contact your local extension service office for more information.

◆ Attend your local Integrated Farm Management demonstration, or Model Farm demonstration to learn how you can produce more efficiently. You can save money *and* protect the environment.

LYNN BETTS, SOIL CONSERVATION SERVICE

Earth Day 40
A Look Ahead

An Editorial

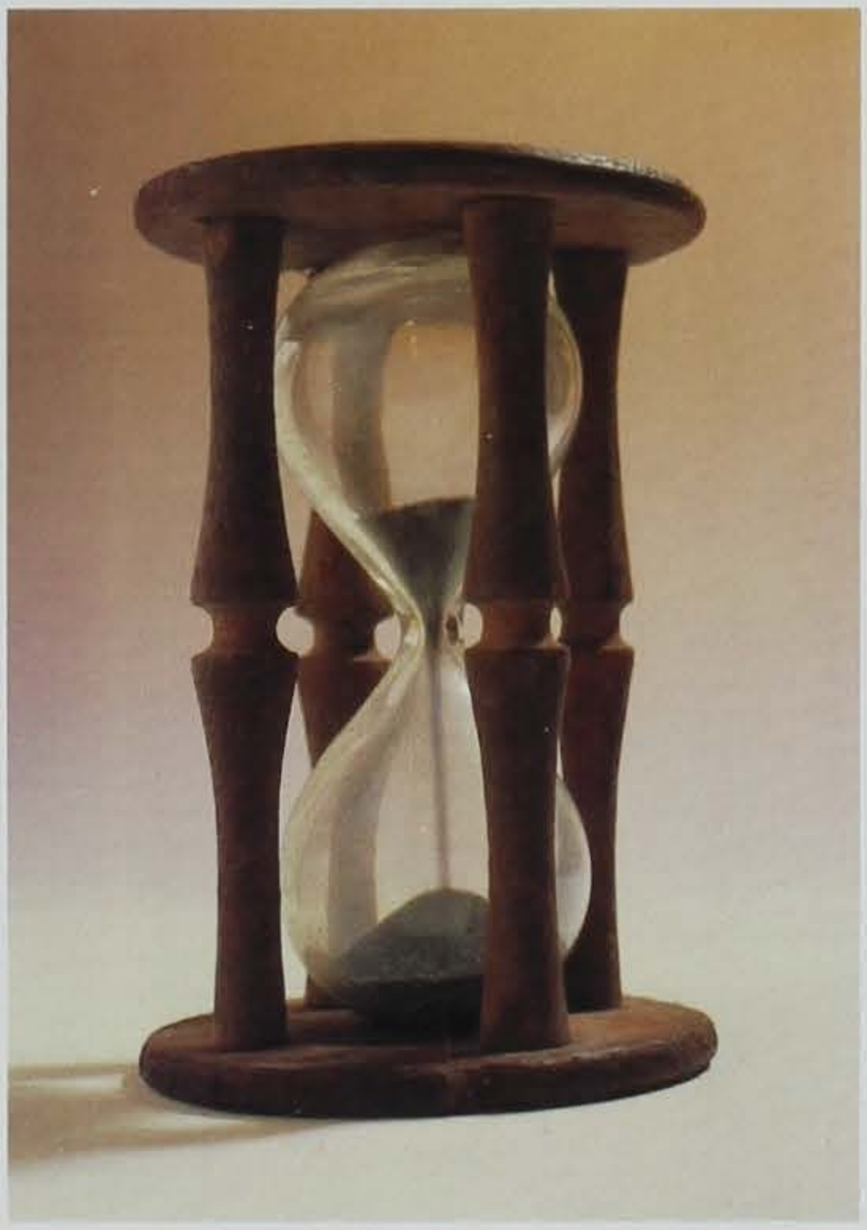
Like Earth Day 1 (40 years ago), Earth Day 20 (20 years ago), was quite a success. We recognized, 20 years ago, that we were on the brink of a successful environmental program, if, and that was a big IF, we each found a way to have environmental considerations become a part of everyday life.

Twenty years ago, we speculated that with peace breaking out around the world, there would likely be new and expanded opportunities to focus on national and global programs aimed at environmental defense, rather than military defense. We speculated correctly, and we have some great successes to show for our environmental investments:

Today, fossil fuel consumption is only half of what it was in 1990, and we expect to cut it in half again in the next 10 years. Hydrogen-powered mass transit and solar-powered homes have made much of the difference.

Last year, the worldwide acreage of tropical forests rose to within 90 percent of the total acreage in 1990. Although we lost more than 1,000 varieties of tropical wildlife, before the United Nations' re-forestation innovations began to work, we are confident that we will not lose anymore through unnatural causes. Worldwide, air quality is now predicted to improve over time instead of deteriorating.

As consumers, we can be proud that we have successfully demonstrated to business and government that we value environmental quality more than an abundant choice of convenient, but wasteful products and services. Despite our successes, we cannot rest. We now know that we can have a healthy environment, and an extremely productive economy. But we also know — more now than ever — that if sacrifices need to be made, we cannot afford to compromise our environmental standards.



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